CORE Organic Country Report

Report on Italian Research in Organic Food and Farming (2000–2005)

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1. History

Introduction

In Italy since the eighties, the scientific community opened a discussion on how to face many agricultural critical points, reconsidering old but renewed approaches to make agriculture more environment and consumer-friendly.

In 1988 the first coordinated project on OF&F (Biological and integrated control of crop and forest pest and disease) was financed by MIPAF, involving 46 research units (research centres and universities).

But it was only in the last decade that interest in organic farming really took off, when production methods continued to develop, along with consumers' keen concern to be supplied with more wholesome, environment-friendly products. There was a major increase in the number of producers, and new initiatives got on the way for processing and marketing organic products.

Italy has become the European country with the largest cultivated surface (954,361 ha, including 246,318 ha under conversion from conventional to organic farming, in 2004). The total surface is mainly cultivated with forage crops and pastures (48 %); the rest is devoted to cereals (20 %), fruit tree, including vineyards and olive-tree (18 %), vegetables and industrial crops (4 %). These data refer to land cultivated under provision of EC Regulation 2092/91 and its modifications.

The gradual recognition of the organic farming potential to create a high added value food market and socio-economic benefits to farmers, producing positive effects on environment, public health, social and rural development and animal welfare as well, has driven the European Union and Italy to adopt specific legislation and promote research actions.

The following different European acts issued after the Council Regulation 2091/92, have all recognized organic farming as a strategic tool to realize a sustainable development of European society: the Council Regulation EC 1257/1999 supporting rural development; the EU Commission Strategy for Sustainable Development in 2001, the Sixth Community Environment Action Programme in 2002 and, finally, the mid-term review of the Common Agricultural Policy in 2003.

The European Action Plan for Organic Food and Farming (OF&F Plan) has been issued in June 2004, strongly supported by Italy during its EU chairing semester (June-December 2003). This document aims "*to assess the situation and to lay down the basis for policy development in the coming years, thereby providing an overall strategic vision for organic farming's contribution to the common agricultural policy (CAP)*". The Commission recognizes the dual key role of OF&F in food market and land management and the importance of research on organic farming and processing methods to exploit this potential *(*Action 7). Therefore, an important part of the country's policies aimed at developing the organic sector has been addressed to strengthen research and training at different levels, adopting specific research programmes and farmers training to ensure the innovation transfer into agricultural practice with close cooperation among researchers, advisory services, farmers and the food production chain.

As other Member States and Regions, Italy has adopted a national Action Plan on OF&F research in 2002. The Action Plan was devoted mainly to the development of organic farming, focusing on agro-environmental programmes, market development, research and production capacity building.

In December 2005, a new National Strategic Plan on OF&F has been approved which does not include specific research priorities, but is a reference framework of actions to strengthen the whole OF&F production chain.

Italian Research on OF&F

Italian National Plan on OF&F research (2002)

Italy adopted its own National Plan on OF research (issued by the Ministry of Agricultural and Forestry Policies, MIPAF) to optimize the use of the resources under a strategic framework programme of actions. In fact, Italian OF&F research has been suffering from a very high and chronic fragmentation considering that other than national institutions, many different public and private bodies locally support OF&F research initiatives, due to the high added value that organic products can represent for some depressed agricultural areas in comparison with the conventional ones.The general OF Plan objective was to establish a national coordination of all research actions by adequate monitoring of ongoing research and evaluation of results and to improve strategies of knowledge and innovation transfer to the organic farming sector, with the cooperation of regional organisations.

The OF Plan promoted: research projects "from farm to fork" involving different stakeholders; the strengthening of the research institutions devoted to OF&F; the coordination of all research initiatives and the knowledge dissemination system.

On the basis of this plan the research should be focused on:

- exploitation of germplasm and biodiversity
- genetic improvement and rescue of old species
- improvement of cultivation techniques
- set up of new processing and marketing technologies
- identification of quality indicators
- strengthening of control systems

In the framework of the OF Plan a national public research call has been issued in 2002 and further voluntary submitted research projects have been funded.

In December 2005 a new general Action Plan on OF&F and a Programme on OF&F were launched by MIPAF, after a large public consultation of stakeholders and the National Consultant Committee of Organic Farming.

The general aim of the new Plan is to enforce and to qualify the agro-food production chains by:

- encouraging the conversion to organic farming
- developing organic animal husbandry also in relation to its fundamental role as source of manure
- strengthening the OF&F internal market
- stressing the OF&F role to support environmental and health policies
- strengthening the use of sustainable energy and materials in coherence with the OF principles
- introducing OF methods also in no-food production to reduce environmental impact and improve people life quality

Some of the foreseen actions are devoted to promote OF&F at international level, creating and enforcing international market, development cooperation networks, as well as research and training.

Consequently, research actions in the next future should mainly be addressed to solving crucial questions to make those objectives concrete and the coordination of the national research system should be a powerful tool to fulfil the OF&F Plan aims.

At the same time, a general revision of the current Italian regulation on OF&F production is in progress and some research needs could rise in the future from this activity too.

2. Organisation

In Italy, Organic Food and Farming research is carried out by many research centres and universities. It does not exist as a single centre devoted exclusively to OF&F research. An overview of the research centres grouped under the reference administrations is as follows:

A) MIPAF - Ministry of Agricultural and Forestry Policies

1. CRA - National Council of Agriculture Research and Experimentation (http://www.entecra.it); most of the MIPAF research centres (30 different institutions) have recently been reorganised under this national research body. CRA has institutional competence on different fields of agricultural research and its structures are strongly involved in OF&F projects.
2. INRAN - National Research Institute for Food and Human Nutrition (http://www.inran.it)
3. INEA - National Institute of Agricultural Economy (http://www.inea.it)
4. ISMEA - Institute for Study of Agricultural Market (http://www.ismea.it)

B) MIUR - Ministry of Education, University and Research

1. Universities: in Italy, there are 23 Faculties of Agriculture, many of them carrying out one or more research projects on OF&F, supported by national or regional authorities:

   Università degli Studi di ANCONA http://www.unian.it
   Università degli Studi di BARI http://www.uniba.it
   Università degli Studi della BASILICATA http://www.unibas.it
   Università degli Studi di BOLOGNA http://www.unibo.it
   Università degli Studi di FIRENZE http://www.unifi.it
   Università Cattolica del Sacro Cuore (PIACENZA) http://www.unicatt.it
   Università degli Studi del MOLISE http://www.unimol.it
   Università degli Studi di NAPOLI "Federico II http://www.unina.it
   Università degli Studi di PADOVA http://www.unipd.it
   Università degli Studi di PALERMO http://www.unipa.it
   Università degli Studi di PERUGIA http://www.unipg.it
   Università di PISA http://www.unipi.it and http://www.agr.unipi.it
   Università degli Studi MEDITERRANEA di REGGIO CALABRIA http://www.unirc.it
   Università degli Studi di TORINO http://www.unito.it and http://www.agraria.unito.it
   Università degli Studi della TUSCIA http://www.unitus.it
   Università degli Studi di UDINE http://www.uniud.it
   Università degli studi di CATANIA http://www.unict.it
   Università degli studi di FOGGIA http://www.unifg.it
   Uiversità Statale di MILANO http://www.unimi.it
   Università di MODENA e REGGIO EMILIA http://www.unimo.it
   Università di PARMA http://www.unipr.it
   Università di SASSARI http://www.uniss.it
   Università di TERAMO http://www.unite.it

   In the academia context also the Agricultural Science Department of S. Anna School of Advanced Studies in Pisa (http://www.sssup.it), integrated with the State University, carries out research on OF&F. In addition, some departments belonging to different faculties (Medicine, Biology, Economy, Veterinary Sciences etc.) and related to human health disciplines, economy and marketing, plant and animal biology are involved in joint research projects on OF&F.

2. CNR - National Research Council: the national research body related to MIUR devoted to carry out research on all fields of knowledge, agriculture included (http://www.cnr.it).

C) Other Institutions

1. ENEA - National Body for New Technologies, Energy and Environment: (http://www.enea.it), research centre related to the Ministry of Environment.
2. IAMB - Mediterranean Agronomic Institute of Bari: (http://www.iamb.it), an Italian operating facility of international centre CIHEAM, enjoying the privileges of extra-territoriality attributed to international organisations by the Italian Republic.

D) Regional or local research centres

1. CRAB- Reference Centre for Organic Farming of Turin Province
2. CRPA - Research Centre for Animal Production (Emilia Romagna, http://www.crpa.it)
3. CRPV - Research Centre for Fruit and Vegetable Production (Emilia Romagna, http://www.crpv.it)
4. Experimental Centre for Organic Farming – ARSIA of Tuscany Region
5. Experimental Research Centre and Safe Crop Centre of S. Michele all' Adige Agricultural Institute (Trento Province, http://www.ismaa.it)
6. Laimburg Research Centre for Agriculture and Forestry (Bolzano Province, http://www.laimburg.it)

E) Funding

The main funding bodies at national level are ministries charged to finance research; in particular research in OF&F is supported by:

- MIPAF - Ministry of Agricultural and Forestry Policies
- MIUR - Ministry of Education, University and Research (mainly for Universities and CNR)
- MAE – Ministry of Foreign Affairs

Other national Bodies as CNR and ENEA can act as funding agencies supporting research in OF&F.

The newly constituted CRA, which groups 30 Institutes, is now an autonomous body (officially since 1st October 2004) planning, doing and financing by its own resources agricultural researches and experimentations, some of which are on OF&F.

At local level, regions and provinces support OF&F research with their own instruments; in addition, some "Interregional Programmes" concerted between national and regional governments can be financed under the provision of the general multi-year law for agriculture.

F) Stakeholders

Hereby the list of main stakeholder categories involved in OF&F, including organic farmers, processors, technical inputs producers (fertilisers, phyto-sanitary products) and consumers.

Association	Type
FEDERBIO Bodies and associations represented: • Associazioni Consumatori ed Utenti (Consumers) • Associazione Italiana Agricoltura Biologica (Producers, Consumers Technicians) • Associazione Marchigiana Agricoltura Biologica (Marche Region: Producers, Consumers Technicians) • AnaBio (Producers) • AQB (Control body) • Associazione Agricoltura Biodinamica (Biodinamic producers) • Assometab (Producers of Inputs (i.e. F, SC and PPP) allowed in OF • Bioagricert (Control body) • Bioagricoop (Producers, Consumers Technicians) • Biobank (Internet portal and press) • Bios (Control body) • Codex (Control body) • Consortium (Control body) • Ecocert (Control body) • SANA (Shows, events and communication) • Formaterre (Training) • ICEA (Control body) • IMC (Control body) • Proscenio (Internet portal) • QC&I (Control body) • Qualità Italia (Control body) • Sisdel (Consulting) • Suolo e Salute (Control body) • Terra Sana Italia • Terre dell'Adriatico (Adriatic regions Producers, Technicians)	National Federation of OF&F Associations and Bodies (control, certification, producers, farmers, consumers, technicians)
IFOAM Italia	Italian branch of IFOAM
CNCU Consiglio Nazionale Consumatori Utenti	Council of Italian Consumers Associations
CIA Confederazione Italiana Agricoltori	National Association of Farmers
COLDIRETTI Coltivatori Diretti	National Association of Farmers
CONFAGRICOLTURA Confederazione Agricoltura	National Association of Farmers
ASSITOL Associazione Italiana dell'Industria Olearia	Italian Association of Food Oil Industries
ASSOLATTE Associazione Italiana Lattiero-Casearia	Italian Association of Dairy Product Producers
FEDERALIMENTARE Federazione Italiana dell'Industria Alimentare	Italian Federation of Food Industry
ITALMOPA Associazione Italiana Mugnai e Pastai	Association of the Milling Industry
AIA Associazione Italiana Allevatori	Italian Association of Animal Breeders
FAI Federazione Italiana Apicoltori	Italian Beekeepers Federation
UNAPI Unione Apicoltori italiani	Italian Beekeepers Union
AIS Associazione Italiana Sementieri	Italian Association of Seed Producers
ASSOFERTILIZZANTI Associazione Industrie Fertilizzanti	Italian Association of Fertilizers (mineral and organic) and soil conditioners producers
CIC Consorzio Italiano Compostatori	Italian Composting Association: public and private companies, local authorities and others involved in the production of compost

3. Mapping research programmes

MIPAF resources

After the first project on biological control of plant pest and disease in 1988, systematically coordinated projects on organic and sustainable farming, voluntary submitted or directly assigned, were funded by the available resources for agricultural research in relation to their strategic role for the MIPAF policy planning.

In 2002, the National Research Plan on Organic Farming PNR-AB was issued; it was financed through the law no. 388/2000 and following modifications. On the same year the first and, at this moment, the only open call for OF&F was launched.

Table 1 lists MIPAF financed research projects according to the institutions of the participant research units (RU), starting from 1998 until present.

Table 2 groups the project budget based on the Organic Eprints subject areas, as agreed in the CORE Organic project. The reported budget refers only to MIPAF contribution to the following items:

- Personnel:
  - contracts only for temporary personnel
  - travel costs for all people involved in the projects
- Equipment (specific for the project)
- Consumables
- Overheads

The salaries of permanent contracts are not included, but they represent a self-financing of the participating research units. Until October 2004, the salaries of permanent researchers belonging to MIPAF Institutes were paid by MIPAF itself (General Affairs Department). The ongoing reform process has modified this situation: now the salaries of permanent contracts of those institutes joining CRA are directly paid by CRA as self-financing of its participant research units.

Moreover, in the years 2000-2004 a further amount of approximately € 2,500,000 has been devoted to some research actions on OF&F included in the annual institutional activity of the MIPAF research centres. For this amount, it is not possible to give a distribution according to the subject areas. Therefore, the following figures (1-3) do not include these resources for institutional activities.

In addition, the reported data on the national projects do not take into account further tasks or research actions related to OF&F financed by MIPAF but as a part of projects more largely focused on sustainable agriculture (i.e. National Research Plan for Citrus Production, Project on Horticulture, Project on Wild Fauna related to agriculture).

Figure 1 shows a graphic distribution of MIPAF resources in relation to the project participants. "Others" mainly includes public research centres (national or regional) and very few private ones (data from *table 1). Figures 2 and 3* report the resources and the financed projects grouped by subjects area (data from *table 2).*

Table 1. Projects financed by MIPAF from 1998 to 2005 (MIPAF data)

YEAR	PROJECTS	PARTICIPANTS (RU)			
	Voluntary submission/direct assignment	Tot	Univ.	MIPAF	Others
1998	1. Developing organic fertilization systems	2	-	2	
1998	2. Pest and disease management in organic farming	9	5	2	2
2000	3. Quality indicators in organic farming products	6	-	4	2
2002	4. Organic animal production in Italy: current situation and perspectives	4	-	3	1
2004	5. Plant essences as crop protectors in organic farming	2	2		
2005	6. Soil management, substrate production and plant nutrition for organic Mediterranean products	5	2	2	1
	7. Analysis of sheep-milk production by organic method	4	1	1	2
	8. Traceability markers for organic fruits	5	-	3	2
	9. Defining strategies to improve competitiveness of organic farming	5	2	-	3
	10. Strategies and alternative products to face the EU legal threshold values for copper in: wine; fruit-tree; vegetables; tomato	4	1	1	2
	11. Potato cultivars for organic farming	3	1	1	1
	12. Evaluation of new crop techniques for organic nursery	7	2	5	-
	13. Comparison between conventional and organic products	5	-	5	-
	Funding (projects 1-13)	**€ 5 394 000**			
2003	**Public Call**				
	14. Sustainable, traceable and safe organic olive oil production	7	5	2	-
	15. New production system for industrial crop: sugar-beet and tomato	8	2	2	4
	16. High quality production for organic hazelnut	8	4	3	1
	17. Economic, environmental and health sustainability in organic farming	5	3	1	1
	18. High quality production in fruit and vegetables for fresh and processed products	12	4	3	5
	19. Genetic and crop improvement for organic cereals – wheat, barley, oats	5	5	-	-
	20. Bioactive substances in the organic farming chain	1	1	-	-
	Funding (projects 14-20)	**€ 5 079 030**			
2000-04	Funding of institutional research activity of MIPAF-CRA centres on OF&F	**€ 2 500 000**			
	TOTAL FUNDINGS	**€ 12 973 030**			

Table 2. Financed projects according to subject areas (projects 1-20 of table 1)

Subject area	MIPAF Resources	Number of projects
Farming systems	1 196 970	2
Animal husbandry	86 000	2
Crop husbandry	6 761 387	11
Soil	600 000	2
Food systems	2 140 000	3
Environmental aspects	-	-
Values, standards and certification	-	-
Knowledge management	-	-
TOTAL FUNDINGS	**10 473 030 ***	**20**

* The sum does not include institutional research activity of CRA research centres.

Figure 1

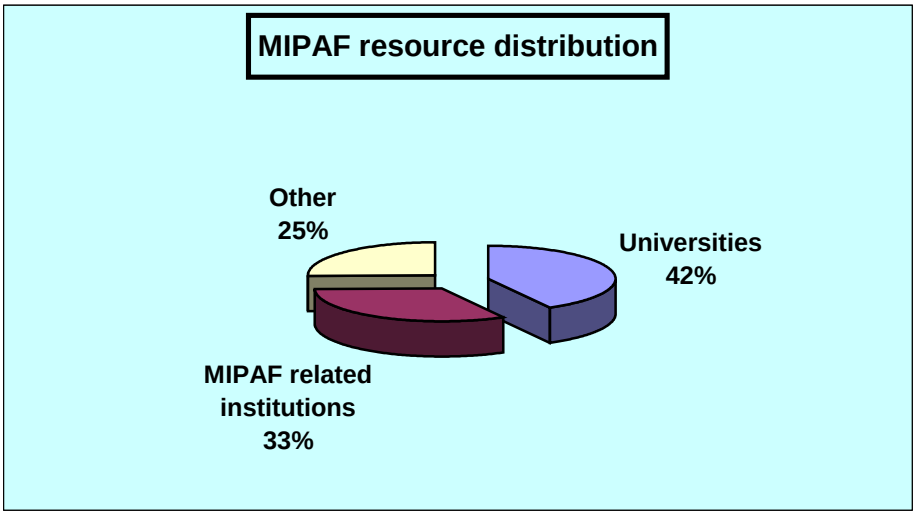


Figure 2

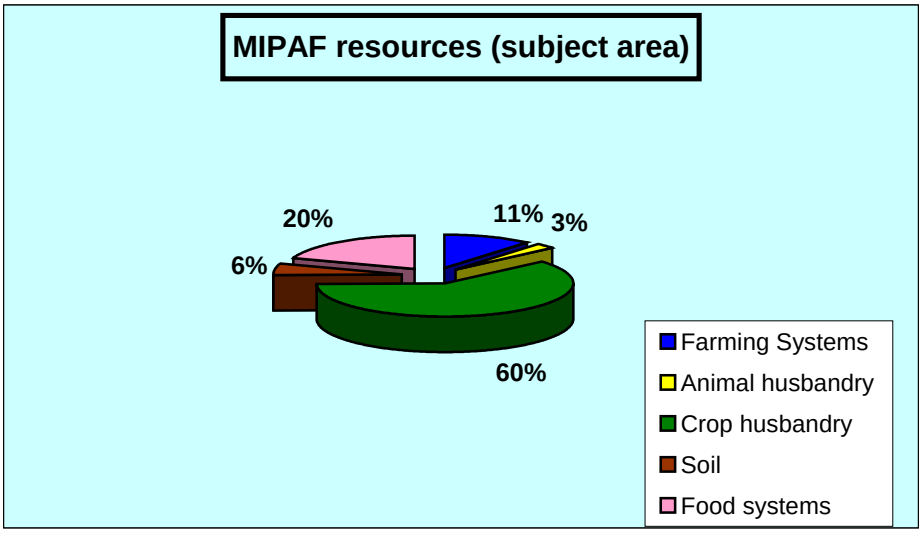
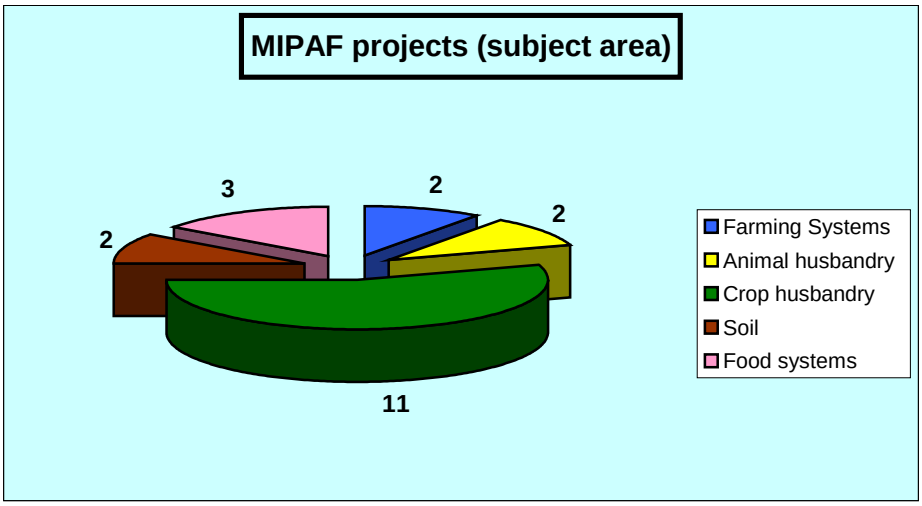


Figure 3



Other initiatives

Financial resources transferred to OF&F research projects by other funding sources cannot properly be estimated because of the plethora of initiatives and institutions involved and lack of information on project budgets.

A very general overview of subject area and funding bodies - updated at 2002 - is reported in *table 3.*

Table 3. OF&F Projects financed by public or private institutions*

Institution	Fruit-tree, grape and wine	Horticulture	Cereals and other crops	Husbandry	Human nutrition	Others	Total
Regions	19	18	16	11		1	**65**
Universities	5	3		2	2		**12**
Ministry of Research	1		2		1		**4**
CNR (National Research Council)		1	1				**2**
ENEA (National Body for Alternative Energy)	4		1				**5**
EU		1	5	3			**9**
Provinces, local institutions	19	4	4	1			**28**
Private	1		4				**5**
Total	**49**	**27**	**33**	**17**	**3**	**1**	**131**

- data mainly from CEDAS: Ricerca e sperimentazione sull'agricoltura biologica in Italia, Annuario 2002, CEDAS, Osservatorio Agroambientale, Forlì-Cesena, Italy; updated and modified.

More recently, a relevant initiative has been financed by the Italian Ministry of Education, University and Research in December 2005, the "SimbioVeg" project (organic farming methods and systems to improve plant production and environmental quality). It is a three-year project with a total cost of € 2 million (including co-financing of participating research bodies) involving seven

research units (universities, CRA, regional research bodies and OF&F associations) coordinated by the Agricultural Science Department of S. Anna School of Advanced Studies in Pisa. The project deals with crop husbandry, and more in details, with the study of different stockless production systems and several topics as soil tillage, weed management, crop quality, post harvest management and techniques, nutrient turnover, soil and environmental quality.

5. Research facilities

Public research institutions (universities, national and regional research bodies) in the more general context of sustainable agriculture usually manage the Italian research facilities available for Organic Food and Farming studies and experimentation. They are very fragmented and spread over different locations and climatic areas, thus an accurate monitoring is very difficult at this stage.

The Organic Eprints database will allow a better understanding of the OF&F available facilities, when fully operating.

A selection of facilities utilized in MIPAF funded projects is shown in the following *tables 4 and 5*. CRA, grouping 30 institutions, has facilities working on different OF&F subject area around Italy. *Table 6* shows the known long-term field experiments currently running in Italy.

Table 4. Facilities devoted to OF&F research in MIPAF funded projects

Type	Contacts	Dated/% OF&F	Further details
Laboratory/ analyses	CRA (Consiglio per la Ricerca e sperimentazione in Agricoltura - Agriculture Research & Experimentation Council) Stefano.bisoffi@entecra.it	from 1994; 20 -100 % dedicated to OF&F depending on the subject area. Approximately 300 m^2 labs used for OF&F in research centres located in different regions	state of the art laboratories and analytical instrumentation: spectroscopy, spectrometry, chromatography, molecular biology, NMR, rheology. These equipments are used for studies in plant pathology, entomology, soil chemistry & biology, plants and food related research for different areas: cereals, fruits, vegetables, flowers, olive oil, wine, aromatic plants (herbs), animal husbandry, beekeeping
	INRAN (Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione - Food & Nutrition Research Institute) paoletti@inran.it; mengheri@inran.it	from 1995; 500 m^2 labs (20 % used for OF&F research)	state of the art laboratories and analytical instrumentation for food technology, food chemistry, experimental nutrition; cells-micro-organism culture labs; experimental animal stables
	Dipt. Produzioni Vegetali - Univ.della Tuscia, Viterbo (Dept. Plant Production – Tuscia University) muleo@unitus.it	from 2004; 20 % OF&F 50 m^2 (20 % used for OF&F research)	
	Dipt. Biologia animale e Genetica-Univ.di Firenze (Dept. Animal Biology & Genetics- Florence University) mbuiatti@dbag.unifi.it	from 2004, 20 % OF&F	
	Istituto di Genetica Vegetale, CNR (Institute of plant genetics, National Research Council,) Perugia	50 m^2; 12 % OF&F)	state of the art laboratories and analytical instrumentation of molecular biology: DNA sequence analysis, DHPLC, nucleic acid electrophoresis, PCR
experimental/ demonstration farm	CRA (Consiglio per la Ricerca e sperimentazione in Agricoltura - Agriculture Research & Experimentation Council) stefano.bisoffi@entecra.it	1992 –2000, 100 % OF&F	about 45 hectares in experimental farms located in different regions devoted to: cereals, fruits, citrus, olive oil tree, vegetables, officinal plants, beekeeping; see also tab. 5
greenhouses	CRA (Consiglio per la Ricerca e sperimentazione in Agricoltura - Agriculture Research & Experimentation Council) stefano.bisoffi@entecra.it	2000; 30-50 % OF&F	greenhouses for cereals, vegetables, flowers, olive oil in the research centres located in different regions
	Dipt. Produzioni Vegetali - Univ.della Tuscia, Viterbo (Dept. Plant Production – Tuscia University) muleo@unitus.it;	2004; 20 % OF&F	160 m^2

Table 5. Location of experimental farms involved in some ongoing MIPAF projects

CRA Centres	*Location*	*Size*	*% area OF*	*Production*	*Year*
CRA - Experimental Institute for Fruits	Ciampino (Roma)	32 ha	6 %	Fruits	-
CRA - Experimental Institute for Soil	Fagna (Firenze)	40 ha	50 %*	Forage crops and cereals	1994
	Vicarello (Pisa)	20 ha	50 %*	Forage crops and cereals	1996
CRA - Experimental Institute for Olive tree	Rende (Cosenza)	3 ha	100 %	Olive tree	1997
CRA - Experimental Institute for Forestry	Villazzano (Trento)	0.3 ha	100 %	Officinal plants	2004
CRA – Experimental Institute for Citrus	Lentini (Siracusa)	25 ha	8 %	Citrus (Orange)	1996
CRA – Experimental Institute for Industrial Crops	Budrio (Bologna)	22 ha	10 %	Industrial crops	2000
CRA – Institute for Beekeeping	Reggio Emilia	70 bee-hives	20 %	Honey	2000
Other centres					
Cascina Vimagano, Graffignana (private)	S.Angelo Lodigiano (Lodi)	10 ha	100 %	Cereals	-
Experimental Centre and Agro-environmental Centre (regional)	Calcinaro (Cesena)	18 ha	7 %	Fruits	1996
Regional Experimental Centre of Mirto Crosia	Mirto Crosia (Cosenza)	12 ha	30 %	Olive tree	1997

* sustainable farming included

Table 6. Long term field experiments in Italy

Research Institution/Body and Contact Person(s)	Starting Year	Description/Aims/Size
CRA – (Experimental Institute for Citrus & Experimental Institute for Plant Nutrition) Giancarlo Roccuzzo (giancarlo.roccuzzo@entecra.it) Stefano Canali (stefano.canali @entecra.it)	1994	Studies on yield, quality of citrus, nutrient turnover in the soil-plant system, soil quality. Randomised block experimental design with 4 treatments (1 conv. + 3 bio different soil management strategies). 1.8 ha.
Univ. della Tuscia, Viterbo (Tuscia University) Fabio Caporali (caporali@unitus.it)	2001	Studies on cereals and pulses. Crop combination and interactions. 0.5 ha
Università di Pisa (Pisa University) Centro Interdipartimentale di Ricerche Agro-ambientali (*E. Avanzi*) located in S. Piero a Grado. Paolo Barberi (barberi@sssup.it) Marco Mazzoncini (mazzo@agr.unipi.it)	2001	Field crops (cereals and pulses) in a stockless farming system. Topics: yield and product quality, soil management, weed management, nutrient turnover, soil quality, crop interactions. Comparison of conventional *vs.* organic. 24 ha
Università degli Studi di Firenze (Firenze University). Azienda Agraria Montepaldi. Concetta Vazzana (concetta.vazzana@unifi.it)	1991	Field crops (cereals and pulses) in a stockless farming system. Topics: yield and product quality, functional biodiversity in relation to crop protection, green manuring, crop

Research Institution/Body and Contact Person(s)	Starting Year	Description/Aims/Size
		interaction, evaluation of allowed F+SC. Comparison of conventional *vs.* integrated *vs.* organic. 13 ha (microfarm experimental approach)
Università degli Studi di Perugia (Perugia University). Experimental station of the University, located in Papiano Guiducci Marcello (mguid@unipg.it) Arianna Boldrini (ariannaboldrini@yahoo.it)	1998	Field crops and open field vegetables (tomato) in a stockless farming system. Topics: yield and product quality, crop protection, green manuring, mechanical weed management, variety testing. Comparison of conventional (low input) *VS* organic. 1.4 ha
Centro Ricerche Produzioni Vegetali – CRPV (Cesena). Cristina Piazza	1996	Field crops and open field vegetables (tomato) in a stockless farming system. Topics: yield and product quality, green manuring. Comparison of conventional *vs.* organic + new technologies for OF. 8 ha.
Centro Ricerche Produzioni Vegetali – CRPV (Cesena). Vanni Tisselli (tisselli@crpv.it)	1995	Open field vegetables (horticultural specialised production system). Topics: effect of rotation, green manuring, variety testing, allowed inputs (F+SC and PPP) testing and evaluation. Aimed to develop new technologies for OF. 1.4 ha.
Centro Ricerche Produzioni Vegetali – CRPV (Cesena). Vanni Tisselli (tisselli@crpv.it)	1999	Open field vegetables for industrial transformation (i.e. green beans, spinach, pea, tomato) and cereals (not a specialised horticultural production system). Topics: effect of rotation, green manuring, variety testing, allowed inputs (F+SC and PPP) testing and evaluation. Aimed to develop new technologies for OF. 1.2 ha.

6. Initiation of research, stakeholder engagement and management of calls

Overall research programme (including agriculture)

Since 1998, a national law (D.L. 204/98) on reorganisation of the entire public research system has provided instruments and established rules to programme, finance and evaluate research and to reorganize public research structures. The general policy guidelines and the three-year National Research Programme (PNR) include strategic priorities and actions for agriculture and rural development research also proposed by MIPAF. PNR represents the national research framework, which all the specific programmes and projects are referred to. It also provides financial instruments (e.g. FISR - Fund for Strategic Research) allowing national bodies to launch co-financed research programmes through public calls.

To identify R&D requirements and investment priorities, a wide consultation with stakeholders, regional governments, farmers and industrial associations, academia as well as public and private research institutions has been carried out under the coordination of the Ministry of Education, University and Research.

The new National Research Programme (PNR 2005-2007) launched in March 2005, is in force for the next three years. It includes strategic macro-objectives to pursue life quality (health, safety, environment) and sustainable development, among which the strategic programme no. 9 on "Typical agro-food products exploitation and food safety through new systems to characterize products and to ensure quality" is specifically focused on the agro-food sector.

In July 2005, a call (DM MIUR 18/07 2005 no. 1621) open to the scientific community and to the industrial system has been launched to collect research project proposals on the realization of the strategic PNR programmes. Under the strategic programme no. 9, proposals with topics and actions related to OF&F are expected, as organic farming been recognized as a powerful tool to improve product quality, safety and environmental sustainability.

MIPAF programme for research in agriculture and OF&F

Furthermore, MIPAF is also responsible for programming and supporting the national research in agriculture, under the provision of the general long-term law for Agriculture (499/99).

In order to identify agricultural research needs and define strategic objectives and actions, MIPAF coordinates permanent consultation groups with farmers, agro-industry associations, scientific community and regional governments. The General Direction "Rural Development" through its Research Office is in charge to define research plans and launch public calls or direct assignments to the scientific community, select and evaluate projects realising the strategic programmes, objectives and actions agreed with the consultation groups and regions.

Under this general procedure and the financial programming law for 2001 (art 123, no. 388/2000), a National Research Plan on Organic Farming was defined by MIPAF at the end of 2001, after a consultation process involving the state-regions-autonomous provincial governmental conference and the National Committee on Organic Farming, appointed by ministerial decree. A public research call has been launched in 2002, to realize the plan and the selected projects are still going on.

The updating of the Action Plan has been done at the end of December 2005. The new National Strategic Plan on OF&F does not include specific research priorities but a reference framework of actions to strengthening the whole OF&F production chain.

Moreover, as the Italian legislation on OF&F is still under revision, specific research requirements are expected to bring about the new regulations.

Regional and local research

Regions and provinces can also autonomously define research programmes and fund research projects tailored to the specific requirements of their local agricultural and agro-industry system.

They have recently agreed on common approaches and methodologies to identify aspirations and research needs, priorities and research management procedures. An inter-regional network of regional research representatives has been established to create synergies, develop common procedures and give technical support to regional policy makers on agricultural research. This network operates through temporary groups with competence on different production chains or more general subjects, one of which is Organic Food and Farming. The research and investment priorities, defined by the groups of competence after local consultations and approved at political level by the Conference of Regions' and Province Governors, become the basis to launch common research calls at regional and inter-regional level.

The inter-regional network of research representatives has actively cooperated with the MIPAF Research Office and the Network of Agriculture Research Institutes related to the Ministry (now CRA) both on definition of research management methodologies and procedures, as well as on national research priorities identification. In 2005, a new project on animal husbandry has been approved under the financing scheme of Interregional Programmes, involving research centres and universities of different regions.

7. Selection criteria and evaluation procedures

The general procedure to select and evaluate agricultural research projects financed by MIPAF - Department of Development Policies (former Department of Quality and Agro-food Products) is in force also for OF&F projects. This procedure has been set up under the framework of the common rules and regulations for public administrations and its inspiring principles are shared by all public research funders.

Any project should meet a general requirement, that is, coherence with planning and programming documents issued by national Institutions (see paragraph 6: MIUR National Research Programme, MIPAF guidelines etc.).

Part of the annual budget (50 %) allocated at the above mentioned Department of MIPAF for research actions must be assigned to projects carried out by CRA.

Financing schemes of MIPAF research

There are three different ways to finance research: public calls, voluntary submission and direct assignment to carry out a specific project.

1) *Public call*: a call represents a specific set of rules to assign a certain budget to selected actions and it is published on the Official Journal of the Italian Republic and on the web site of MIPAF. The call is issued on the basis of EU and national regulations and it contains admitting requirements and evaluation criteria for presentation of proposals. The requirements can be defined from time to time, according to needs of a specific thematic area (i.e. OF&F).

A call must contain the following items:

- admission requirements
- general objectives and indications of research actions to be financed
- budget
- rate of co-financing, if any
- type and duration of projects, which can be financed
- evaluation criteria and their relative weight in relation to the type of project (specific annex for each call)
- deadline, procedures and organisms involved in proposal selection and conditions to negotiate the contract (financing and scientific-technical assessment)
- general conditions of the research contracts: eligible costs, cost statement, monitoring, etc.

A public call on OF&F was launched in 2002, by which seven projects have been financed for a total amount of about € 5,000,000 (for details see paragraph 3: mapping research programmes).

2) *Voluntary submission:* since 2003, every year from 1st April to 30th September researchers can submit an *expression of interest* proposal to apply for the annual budget assigned to "*curiosity driven"* projects or to parts of projects supported by other institutions, to be co-financed.
If the project *expression of interest* is approved (see below for evaluation criteria) an extended and detailed project can be submitted.

3) *Direct assignment:* this way is used for relevant research actions of public interest and carried out by specific expertises. Furthermore, in this case the scientific and technical quality of the proposal is evaluated through the general procedure described below.

During 2005, projects in OF&F for a total amount of about € 3,400,000 were financed under procedures 2) and 3). For further details, see *table 1*.

Types of research proposal

The complexity of the project, number of participants and budget can differ in relation to:

- kind of the proposed actions: basic research, applied research, experimentation and demonstration activities
- the general programme which the proposal refers to
- the general and specific objectives of the described actions

Independently from the presentation type, any proposal must include the following elements:

- description of the project and its upgrading as regards to the state of art
- objectives and expected results
- scheduling of the activities
- description of deliverables and milestones
- monitoring of the described activities
- methods and monitoring indicators to verify results
- dissemination and result exploitation
- estimated costs and their distribution over categories and time

Evaluation committee

A committee appointed by ministerial decree mainly carries out the evaluation procedure. This is a permanent organ and members can be changed or added.

For specific needs (monitoring of projects, call evaluation procedures) this committee can be assisted by experts chosen from the official list of the Ministry, established in 2003 and updated in 2005, following public calls. This was the case of the public OF&F research call of 2002, for which an *ad hoc* committee was appointed by the Minister (normally at least one member from the permanent committee must be included).

Evaluators must be independent, not directly or indirectly involved in the project under evaluation and must sign *a declaration form*.

Evaluation criteria

1) Criteria for project expression of interests:

- scientific expertise of the research proposer
- fair ratio of proposed actions/available resources (capacity to carry out the research)
- appropriate budgeted costs in relation to the proposed actions
- clearness and verifiability of the overall objectives and results
- degree of scientific innovation compared to the actual know how
- suitability of the described methods to the declared objectives

2) Extended projects: in addition to the above-mentioned criteria, the evaluation criteria are more detailed and grouped under these more general topics:

- scientific-technical quality and innovation (including interdisciplinarity, multidisciplinarity, etc.)
- coordination and resources management; including appropriate project size, cost and duration; integration among the research group
- contribution of the project to the overall programme objectives (coherence with call overall objectives and/or to the Ministry research policy guidelines)
- scientific, social and economic impact of the project, including contribution of the project to solve the problem, stakeholders/users involvement, dissemination of the results and efficacy of knowledge transfer to the agriculture system

Monitoring and ex-post evaluation

Internal monitoring: in each project a monitoring plan is required to check scheduled activities, milestones and deliverables, and propose corrective actions. This plan, as part of the project, is submitted for approval.

External monitoring: experts appointed by MIPAF to the projects monitor the ongoing activities on the basis of periodic scientific reports, annexed to the cost statements, and of any other information given by the coordinator under request. This monitoring can be carried out by the same experts of *ex-ante* evaluation or by someone else, being the decision of the Ministry.

Usually, ex-post evaluation of single projects is not systematically carried out, but an assessment of project results previously obtained is done before financing new projects on similar subjects, mainly if the proposals are coming from the same proponent.

8. Utilisation of research

The more common way to disseminate research results is by publication, workshops and meetings usually organised in the framework of each project. Often these meetings are not only addressed to the scientific community, but other participants from public administrations (national, regional or local), technical offices and stakeholders are invited too, having the opportunity to take part in the discussion.

The transfer of innovation to farmers is ensured by the technical assistance of regions and local institutions, having among their institutional tasks to disseminate knowledge, results and innovation. This task is carried out in cooperation with farmer and producer organisations, under specific regional regulations.

9. Scientific education and research training

Universities are devoted mainly to the scientific education through the 23 Faculties of Agriculture listed in paragraph 2 B). Following the last reform in 2001, the old 4-5 year degree is under completion and now an Italian university can release two different degrees:

- 3 years degree (1st level, L);
- 2 years specialist degree (2nd level, LS).

Moreover, some Universities offer specialisation courses and masters after graduation. Some university courses and masters have generally been devoted to sustainable agriculture, but in the last few years specific organic farming courses have been established with the main objective to training high level technicians in OF&F and, in some cases, also in biodynamic agriculture.

In *table 7*, a review on main university courses and masters now ongoing is presented.

Table 7. Italian university courses, masters and PhD in OF&F

University	University Courses	Type	Requirements	Years
Pisa	Agricultural Sciences (organic and multifunctional farming)	L	high school	3
Torino	Plant Production (Organic farming productions)	L	high school	3
Viterbo	Agricultural Sciences (Agro-ecology)	L	high school	3
Palermo	Organic Farming	L	high school	3
Firenze	Organic and Environmental Farming	LS	1st graduation	2
Pisa	Agricultural Sciences (organic and multifunctional farming)	LS	1st graduation	2
Torino	Agro-ecology	LS	1st graduation	2
Viterbo	Agricultural Sciences (Agro-ecology)	LS	1st graduation	3
	Masters			
Bologna	Sustainable Development and Agro-environmental Systems Management		1st graduation	1
Firenze	Agro-ecology (organic and biodynamic farming)		1st graduation	1
Milano	Management, Control and Marketing for Organic Production		1st graduation	1
Napoli	Organic Farming		1st graduation	1
Pisa	Exploitation and Control of Quality Agro-food Production		1st graduation	1
Siena	Communication for Wine and Food, typical and Organic Products		1st graduation	1
Mediterranean agronomic Institute of Bari (IAMB-CIHEAM)	Mediterranean Organic Farming		1st graduation (mainly for students from developing countries)	

MIPAF contributes to scientific education and research training both financing fellowships, grants and contracts for young researchers in the framework of ongoing projects and with added resources to the project budgets. In the latter case, only CRA research units can benefit from education and training fundings for graduate and post-graduate students carrying out their activity under the supervision of CRA researchers. MIPAF can also fund PhD grants, but at this moment there are no PhD grants in OF&F.

The MIPAF budget specifically devoted to OF&F education and research training in the last years is reported in *table 8*.

Table 8. MIPAF resources for fellowships and research training on OF&F

Year	Number	Type	Budget €	Duration (years)
2001	15	Research training contracts	232,000	3
2003	12	Fellowships for graduate students (2nd degree)	180,000	2
2003	22	Research training contracts	341,000	3
Total			**753,000**	